



SAR EXEMPTION REPORT

Report Number. : 13658336-E5V2

Applicant : AliveCor
444 Castro Street Suite 600
Mountain View, CA, 94041
US

Model : AC-021

Brand : AliveCor

FCC ID : 2ASFFAC021

IC : 25747-AC021

EUT Description : KardiaMobile Card with BLE functionality

Test Standard(s) : FCC Part 1 Subpart I
FCC Part 2 Subpart J
RSS 102 ISSUE 5

Date Of Issue:

April 28, 2021

Prepared by:

UL VERIFICATION SERVICES
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888



NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	4/26/2021	Initial Issue	---
V2	4/28/2021	Section 3 and 6 updated	Henry Lau

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. REFERENCES	5
4. FACILITIES AND ACCREDITATION	5
5. EQUIPMENT UNDER TEST	6
5.1. <i>DESCRIPTION OF EUT</i>	6
5.2. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	6
6. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS	6
6.1. <i>FCC</i>	6
6.2. <i>ISED</i>	7

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: AliveCor
444 Castro Street Suite 600
Mountain View, CA, 94041
US

EUT DESCRIPTION: KardiaMobile card with BLE Functionality

MODEL: AC-021


APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 1 SUBPART I & PART 2 SUBPART J	Complies
RSS 102 ISSUE 5	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Francisco deAnda
Staff Engineer
CONSUMER TECHNOLOGY DIVISION
UL Verification Services Inc.

Prepared By:



Henry Lau
Test Engineer
CONSUMER TECHNOLOGY DIVISION
UL Verification Services Inc.

2. TEST METHODOLOGY

All calculations were made in accordance with FCC Parts 1.1310, 2.1091, 2.1093, KDB 447498 D01 v06, KDB 447498 D03 V01, IEEE Std C95.1-2005, IEEE Std C95.3-2002, IC Safety Code 6 and RSS 102 Issue 5.

3. REFERENCES

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

All measurements were made as documented in test report UL Verification Services Inc. Document 13658336-E4 for operation in the 2402 – 2480Mhz Band

Output power, Duty cycle and Antenna gain data is excerpted from the applicable test reports and product documentation provided by the applicant.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building 1: 47173 Benicia Street Fremont, California 94538, U.S.A.	US0104	2324A	208313
<input type="checkbox"/>	Building 2: 47266 Benicia Street Fremont, California 94538, U.S.A.	US0104	22541	208313
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd Fremont, California 94538, U.S.A.	US0104	2324B	208313

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a battery powered single electrode device that is used to record, store, and transfer electrocardiogram (ECG) rhythms. The ECG data is transmitted to the Kardia app on a smart device via BLE communication.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna gain(s) and type, as provided by the manufacturer, are as follows:

The radio utilizes a Monopole PCBA Meander antenna, with a maximum gain of 2 dBi.

6. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

6.1. FCC

SAR test exclusion in accordance with KDB 447498.

a) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [f(\text{GHz})] \leq 3.0$, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

SAR Exclusion Calculations Table for Portable Devices (separation distance ≤ 50 mm)

Antenna	Tx	Frequency (MHz)	Avg Output power		Separation Distances (mm)	Calculated Threshold
			dBm	mW		
BLE Main	BLE	2400	4.00	3	5	0.9

Conclusion:

The computed value is ≤ 3 ; therefore, EUT qualifies for Standalone 1-gm body SAR test exclusion.

The computed value is ≤ 7.5 ; therefore, EUT qualifies for Standalone 10-gm extremity SAR test exclusion.

6.2. ISED

RSS-102 Issue 5 Clause 2.5.1 Exemption Limits for Routine Evaluation – SAR Evaluation

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation - exemption limits for routine evaluation based on frequency and separation distance.

Frequency MHz	Exemption Limits (mW)				
	At separation distance of ≤5mm	At separation distance of 10mm	At separation distance of 15mm	At separation distance of 20mm	At separation distance of 25mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency MHz	Exemption Limits (mW)				
	At separation distance of 30mm	At separation distance of 35mm	At separation distance of 40mm	At separation distance of 45mm	At separation distance of ≥50mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Notes:

- 1) Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p) source-based, time-averaged output power.
- 2) For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5.
- 3) If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

Exemption Justification

Frequency (MHz)	Separation Distance (mm)	Exemption Limit (mW)	Exemption Limit for limb=worn devices (mW)	Measured Power (mW)*
2402	5	4.264	10.655	3
2480	5	3.941	9.8525	3

*This measured power is conducted.

END OF TEST REPORT